

# Chapter 14 Startup Assignment

Pg. 405 # 33, 36, 37, 41, 53

$$\begin{aligned}
 33) H &= \frac{kA\Delta T}{L} = \frac{200 (\overset{\substack{\text{k for} \\ \text{Al}}} {\pi \times .01^2}) (460 - 22)}{.33 \leftarrow \text{length}} \\
 &= \frac{200 (3.14 \times 10^{-4}) (438)}{.33} \\
 &= 83.4 \text{ W}
 \end{aligned}$$

$$\begin{aligned}
 36) H &= \frac{kA\Delta T}{L} \\
 200 &= \frac{(.2)(1.5)(.5)}{L} \rightarrow L = 7.5 \times 10^{-4} \text{ m}
 \end{aligned}$$

Distance, directed along direction of conducted energy. In this case, equal to thickness of skin.

$$\begin{aligned}
 37) H &= \frac{kA\Delta T}{L} = \frac{(.84)(4 \times 4)(30 - 10)}{.12} \\
 &= 2240 \text{ W} \leftarrow \text{This is the total amount of energy per second that must be transmitted through the wall.} \\
 \# \text{ Bulbs} &= \frac{2240 \text{ W}}{100 \text{ W}} \\
 &= 22.4 \text{ bulbs}
 \end{aligned}$$

